

OKLAHOMA
Farm & Ranch*A*Syst

Fact Sheet 2

Reducing the Risk of Ground Water Contamination by Improving Pesticide Storage and Handling

This fact sheet addresses two areas of pesticide management that can reduce the risk of contaminating ground water—pesticide storage and pesticide handling. Pesticide storage and handling are important because a spill could pose a direct threat to your farm's drinking water supply. Storing and handling pesticides properly can dramatically reduce the risk of spills. When stored safely and securely, pesticides pose little risk to ground water. Proper handling practices include mixing and loading (including site selection), spill cleanup, and container disposal.

Pesticide Storage

The pesticide storage facility must keep pesticides cool, dry, secure, and accessible for use. Reduce the need to store pesticides by buying only the amount you need. Carefully estimating current needs and maintaining an accurate inventory will help. Always store pesticides away from high traffic areas where containers may be damaged or spilled.

Pesticide storage areas should be designed to contain spills without contaminating the floor, the soil, or the environment. This is done through the use of a curbed, impermeable floor which confines any spills to a limited area.

Consider the benefits of building a new pesticide storage facility versus modifying an old facility. On a short-term basis, an existing building can be used for pesticide storage, but a special purpose pesticide storage facility is recommended in the long term to provide proper containment and to reduce risk.

For emergency situations, post notices that identify the locations of pesticide storage. It is also important to notify the fire department of pesticide storage locations. Post the inventory where it will be available to emergency personnel in the event of an accident or fire. An accurate inventory includes the material safety data sheets (MSDS) for each product in case the label gets separated from the container.

New Storage Facility

Building a new facility just for pesticide storage may be expensive, but is generally safer than trying to modify an area designed for other purposes. The following points should be considered:

- * **Site selection.** Locate the building downslope and at least 100 feet from any water wells—well away from streams, water bodies, and out of any flood plain. Separation from wells should be greater if the site has sandy soil or fractured bedrock near the land surface. The site should have proper drainage and stability to ensure that a containment pad will not be subject to stresses from soil movement.
- * **Primary Containment.** The original pesticide container provides primary containment for the product. Original containers may be jugs, bottles, barrels, bulk tanks, or bags. The major aim of pesticide storage should be to maintain the integrity of the original product container to avoid the accidental release of the pesticide into the environment.
- * **Secondary Containment.** A system designed to contain spills in case of primary containment failure without

contaminating buildings, the soil, or the environment is a secondary containment system. The system may consist of sealed floors, curbs, dikes, or sealed basins that will catch and hold all the contents of a container if leaks or spills occur. The actual containment volume is specified by regulation as 125 percent of the contents of the largest bulk container. A mixing/loading pad with a raised edge will provide secondary containment during the transfer of pesticides, to or from spraying equipment or nurse tanks.

- * **Shelving and containers.** Use pallets to keep large drums or bags off the floor. Shelves for smaller containers should have a lip to keep the containers from sliding off. Shelves should have a nonabsorbent surface which can be easily cleaned. Bulk tanks should be protected by a fence or wall to prevent damage from vehicles or equipment.
- * **Security.** Buildings, cabinets, and valves on large tanks should be locked to prevent unauthorized entry or use of pesticides. While security of pesticide storage areas is important, rapid access in emergency situations should also be considered.
- * **Signs and labels.** Identify the building or cabinets as a pesticide storage area. Labels and material safety data sheets (obtained from the dealer) should be available outside the building to give firefighters information about pesticides during a fire or emergency spill response. Label separate shelves for herbicides, insecticides, and fungicides. Make sure the containers are clearly labeled.

* **Emergency equipment.** Emergency eye wash fountains and emergency showers should be located close to the storage building and mixing/loading facilities. A warning signal should be activated when emergency eye wash or shower units are used. Fire extinguishers suitable for the pesticides stored should be placed within 15 to 30 feet of the building. Telephones should be outside the pesticide storage building and nearby for emergency response.

Modifying an Existing Storage Facility

An existing structure can be used for pesticide storage; however, this often introduces more risk. The least expensive alternative for storage improvements may be to install steel shelving and store pesticides in individual plastic tubs to provide individual containment. Sound containers are the first defense against leaks. Consider how pesticides can be protected and use the oldest pesticides first.

When modifying an existing facility, the following points should be considered:

- * **Storage environment.** Keep the storage environment cool, dry, secure, well ventilated, and accessible, but out of high traffic areas. Do not store pesticides with other hazardous materials, such as fuels or other combustibles.
- * **Containment.** All pesticide spills must be contained and isolated. Plastic, metal, or fiberglass tubs may be used for small containers. Containment for bulk tanks can be difficult because the containment must be large enough to hold more than the contents of the tank plus the displaced volume of any other storage tanks and equipment in the containment area. Consider where the runoff water used to fight a fire will go and where it might collect. A secondary containment dike should be constructed to keep water from flowing off the immediate site. Any contaminated water should be collected for proper disposal or use.

- * **Shelving and containers.** Provide pallets to keep large drums or bags off the floor. Shelves for smaller containers should have a lip to keep the containers from sliding off. Shelves should have nonabsorbent surfaces which can be easily cleaned. Finally, bulk tanks should be protected by a fence or wall to prevent damage from vehicles or equipment.
- * **Security.** Storage areas, cabinets, and valves on large tanks should be locked to prevent unauthorized entry or use of pesticides.
- * **Signs and labels.** Identify the building or cabinets as a pesticide storage area. Labels and material safety data sheets (obtained from the dealer) should be available outside of the building to give firefighters information about pesticides during a fire or emergency spill response. Label separate shelves for herbicides, insecticides, and fungicides. Make sure the containers are clearly labeled.

Handling

Without a suitable containment facility, ground water contamination can result from spills in the mixing and loading area. Small quantities spilled regularly in the same place can go unnoticed, but the pesticide can contaminate the soil and eventually reach ground water. By mixing and loading on

an impermeable (liquid proof) surface, such as a sealed concrete pad, you can contain and reuse most spilled pesticides.

Mixing and Loading

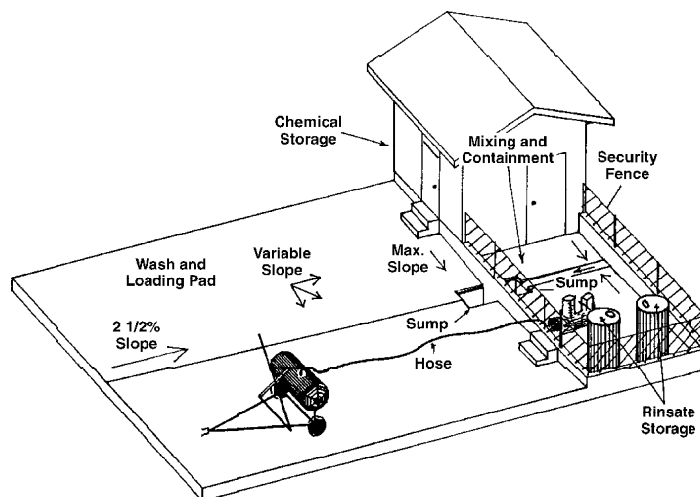
Site (mixing/loading pad description)

Containing pesticide spills and leaks requires an impermeable surface with a provision to contain wash water or spills. The mixing/loading pad should be large enough to contain leaks from bulk tanks located on the pad, wash water from cleaning equipment, spills while transferring pesticides to the sprayer or spreader, and rain water if the facility is not roofed or inside a building. The pad should also provide adequate space around parked equipment for washing and rinsing. Having several separate rinsate (rinse water) storage tanks allows you to keep rinsate from different pesticides stored separately. Roofing will minimize the need for storm water runoff prevention measures.

Practices (managing the mixing and loading site)

Even if you don't have an impermeable mixing and loading pad, you can minimize soil and ground water contamination by following some basic guidelines:

- * Do not mix and load pesticides near any well, stream, or body of water.



Farm-sized pesticide facility. From: "Modular Concrete Wash/Containment Pad for Agricultural Chemicals," by R. T. Noyes and D. W. Kammel. ASAE Paper No. 89-1613.

One way to do this is to use a nurse tank to transport water to the field for mixing and loading near the area of application. Another method is to use a hose or piping to supply water away from the well.

- * Rotate mixing and loading areas to prevent product buildup from small spills.
- * Install an AWWA approved backsiphon prevention device on the well or hydrants to prevent reverse flow of liquids into the water supply. The suction pump drawing water from a pond or stream should also have a backsiphon device. Alternately, provide a six-inch air gap between the outlet hose and the top of the sprayer tank. Never place any hose in the sprayer tank while filling.
- * Always supervise sprayer filling. Do not leave equipment unattended. For restricted-use pesticides, a trained and certified applicator must supervise operations.
- * Consider using either a closed handling system, which transfers the pesticide directly from the storage container to the applicator equipment, or water soluble containers which are placed directly into the applicator tank.
- * Rinsate can be used as mixing water on subsequent loads. Spray the last rinsate load on a labeled crop.
- * Do not store rinsates for extended periods. By law there is a 90-day storage limit.
- * The pH of the mixing water can cause some pesticide field mixtures or rinsates to deteriorate rapidly. Contact your county Extension agent or the OSU State Pesticide Coordinator at 405-744-9418 for more details on pH of mixing water.

Spill Cleanup

Refer to the pesticide label for specifics on cleaning up spills. For dry spills, promptly sweep up and use the pesticide as it was intended. For liquid spills, recover as much of the spill as possible and use it as it was intended. The Oklahoma Application Law

Atrazine at 40,000 Parts Per Billion: An Example Case

Staff of the Wisconsin Department of Agriculture, Trade, and Consumer Protection determined that careless disposal of atrazine containers might have contaminated the water supply of a dairy farm. The atrazine concentration in the well water was above the state ground water standard of 3.5 micrograms per liter, or parts per billion (ppb). Upon visiting the farm, the staff found a box of empty 2.5 gallon liquid atrazine containers discarded outside and beneath the drip line of a farm building. Concentrate residues were visible on the outside of the containers. Surface runoff flowed past the containers, discharging near the well field. Samples of surface soil in the drainage way nearby contained atrazine at a concentration of more than 40,000 ppb. Such disposal incidents greatly increase the chance of ground water contamination.

requires that spills of any amount to streams or lakes be reported. In event of spills or leaks on soil, report concentrate spills greater than one quart, or tank mix solution greater than five gallons. Report spills of smaller quantities if they may cause damage because of the specific compound or spill location.

- * To report spills, call the 24-hour Emergency Hotline of Oklahoma Department of Environmental Quality at 800-522-0206.
- * Remove the spilled material and contaminated soil no matter what the quantity, and dispose of it according to recommendations you receive when you report the spill.
- * Have an emergency response plan for the site. Know where the runoff water will go, how to handle your particular pesticides, and whom to call for help.
- * In case of pesticide spillage, use absorbent material such as soil, sawdust, or cat litter to soak up the spill. Shovel all contaminated material into a leak-proof container and dispose of it properly. To obtain the proper disposal procedure, call the emergency telephone number on the pesticide label and/or the respective material safety data sheet.

Container Disposal Practices

Follow label instructions for pesticide container disposal. Pesticide users are responsible for following label instruc-

tions. Unwashed and improperly stored containers can lead to ground water contamination by allowing pesticide residues to leak onto the ground. Some basic guidelines that can help avoid these problems are:

- * Never dispose of pesticide containers in sinkholes, abandoned wells, cisterns, pit silos, or other excavations.
- * Empty returnable containers or mini-bulks and keep them dry and out of the weather until returned to the supplier.
- * Pressure-rinse or triple-rinse disposable plastic containers immediately after use, since residue can be difficult to remove after it dries. Pour rinse water into the spray tank after rinsing. Puncture containers and store them in a dry, covered area until you can take them to a landfill or suitable disposal site.
- * Recycle properly rinsed plastic and metal containers through pesticide container recycling programs if available. See your pesticide dealer or county Extension agent for information.
- * Bind or wrap empty bags to minimize dust and take them to a licensed landfill.
- * Do not bury or burn pesticide containers or bags on the farm.
- * Do not accumulate containers.

Contacts and References

Where to call about...

Human Poisoning—Oklahoma Poison Control Center, 800-522-4611.

Pesticide Spills—Oklahoma Department of Environmental Quality, 800-522-0206 (24-hour emergency hotline). U.S. EPA, 800-424-8802 (National 24-hour hotline).

General Pesticide Information—National Pesticide Telecommunication Network, 800-858-PEST (-7378). Answered 24 hours a day, 365 days a year. Provides information on recognizing and treating pesticide poisoning; pesticide products, cleanup, and disposal; contacts for animal poison centers; certification and training programs; and pesticide laws.

OSU State Pesticide Coordinator, 405-744-9418.

Drinking Water Quality and Treatment and Health Advisories—EPA Safe Drinking Water Hotline, Monday through Friday, 8:00 a.m. to 4:30 p.m., CST, 800-426-4791.

What to read about...

Pesticides in Ground Water. OSU Cooperative Extension Service fact sheet F-7459.

Agricultural Pesticide Storage. OSU Cooperative Extension Service fact sheet F-7451.

Pesticide Education Manual. Penn State University Cooperative Extension Service. Pennsylvania State University, 217 Ag. Admin. Bldg., University Park, PA 16802. 814-865-2541.

Managing Pesticides to Prevent Groundwater Contamination. NDSU Extension Service: Publication E-979 July 1989. North Dakota State University, Fargo, ND 58105.

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